

Case Report

Acute osteomyelitis of the ilium mimics septic arthritis of the hip in children

L Ogonda, G Bailie, AR Wray

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Osteomyelitis of the ilium is uncommon representing 2.3%¹ of all cases of acute osteomyelitis. It is far more common in children than in adults and the clinical features are similar to those of acute pyogenic arthritis of the hip joint. A lack of awareness of this clinical entity in the differential diagnosis of causes of pain around the hip means that physical examination is often inadequate and there are delays in obtaining the appropriate imaging studies. This leads to a delay in diagnosis, which is associated with significant and prolonged morbidity. We present two instructive cases of osteomyelitis of ilium in children and discuss the management of this uncommon condition.

CASE 1 A 13-year-old girl presented with a five-day history of left hip pain and difficulty in weight-bearing. There was no history of trauma. On admission her temperature was 38.2°C. She

was tender over her left groin and iliac crest. Hip flexion was painful but she had no restriction of internal and external rotation. Initial investigations revealed a white cell count of $9 \times 10^9/L$ and ESR of 100 mm/hr. Plain radiographs of the pelvis and isotope bone scan were normal. Ultrasound scan was negative for an effusion within the hip joint. A CT scan of the pelvis showed periosteal elevation in the left ilium with an abscess in the iliacus and gluteus minimus muscles (fig.1). Percutaneous aspiration of the gluteal abscess was performed (fig. 2). Her blood and pus cultures were positive for Staph. aureus sensitive to flucloxacillin. Despite antibiotic therapy she remained febrile. Surgical drainage of the iliacus abscess was therefore undertaken through an apophysis-splitting sub-periosteal approach. She was treated with antibiotics for six weeks with complete resolution of her symptoms.

CASE 2 A 10-year-old girl presented with an eight-day history of pain in the region of the left hip and low-grade pyrexia. She had a limp with difficulty in weight bearing. There was no history of trauma. Her temperature was 38°C and her left hip was held in flexion. She was tender over an area extending posteriorly from the greater trochanter to the gluteal region with pain on passive extension but none on internal and external rotation. Her white cell count was $14.5 \times 10^9/L$

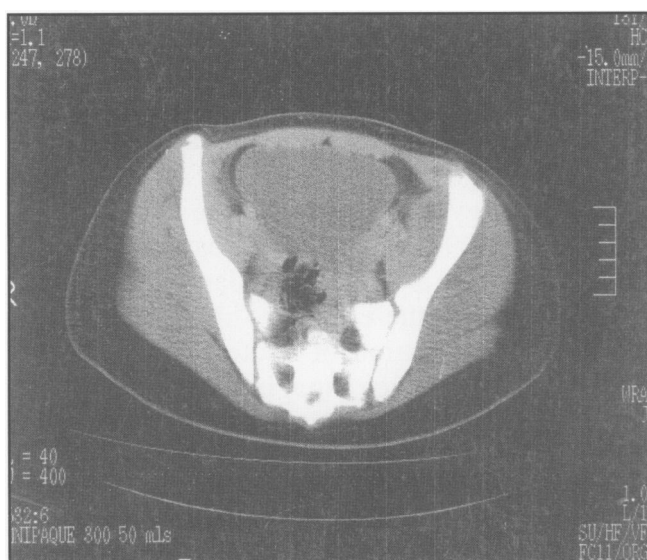


Fig 1. CT scan of the pelvis showing periosteal reaction left ilium and abscesses in the iliacus and gluteus minimus muscles.

Department of Orthopaedics and Trauma, Altnagelvin Area Hospital, Glenshane Road, Londonderry, BT47 6SB.

L Ogonda, MRCS(Ed), Specialist Registrar.

G Bailie, FRCSI, Specialist Registrar.

AR Wray, FRCS(Ed)Orth, Consultant.

Correspondence to Dr Ogonda, 15 Stratheden Heights, Newtownards, Co. Down, BT23 8TD.

E-mail: jokogonda@tinyworld.co.uk

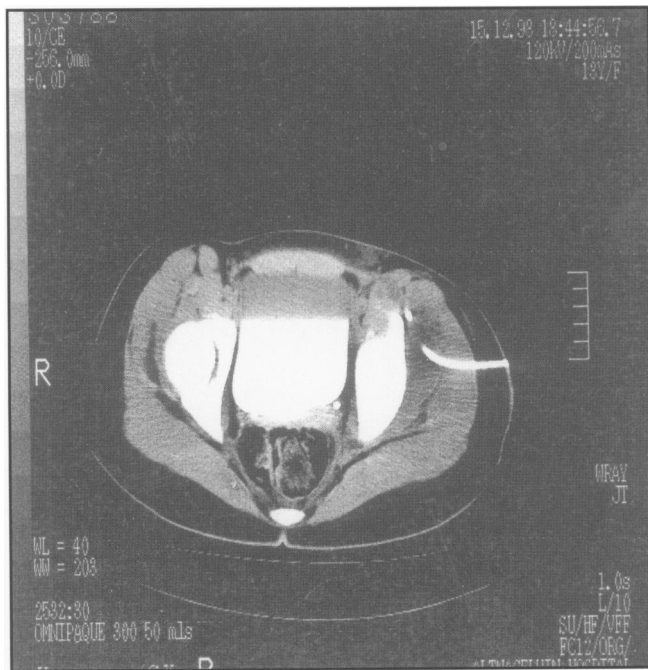


Fig 2. CT-guided percutaneous aspiration of gluteal abscess.

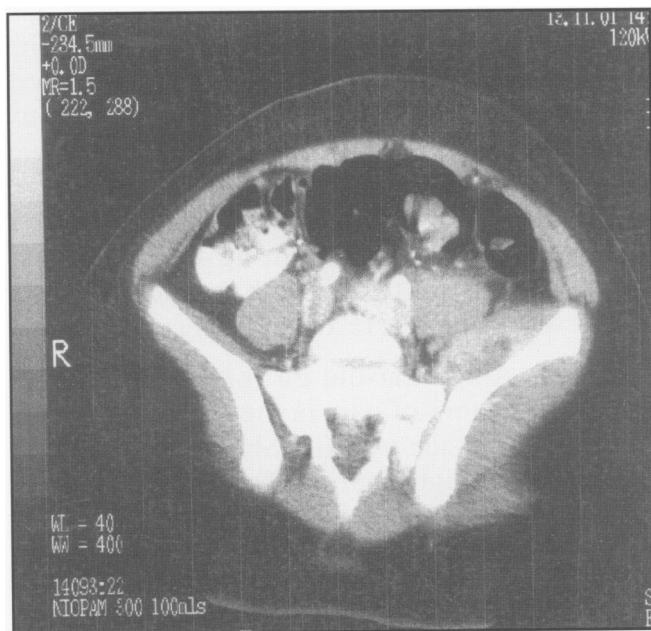


Fig 3. Contrast-enhanced CT scan of pelvis showing periosteal reaction left ilium and an iliacus abscess.

and CRP 102 mg/L. Plain radiographs and ultrasound scan of the hip joint were normal. CT scan showed periosteal elevation in the ilium with an abscess displacing the left iliopsoas muscle. (fig. 3). The abscess was drained and *Staphylococcus aureus* sensitive to flucloxacillin cultured from the pus. She was treated with antibiotics for six weeks and made a full recovery.

DISCUSSION

Osteomyelitis of the ilium is uncommon representing 2.3% of all cases of acute osteomyelitis.¹ It is far more common in children than in adults.^{2,3} The clinical presentation is diverse, the major features being fever, pain, gait disturbance and limitation of movement around the hip joint. These are features suggestive of septic arthritis of the hip joint. The laboratory findings are also similar with the ESR and CRP both usually elevated. These can be used to monitor response to treatment.^{4,5} The leucocyte count is raised in 65% of patients and blood cultures positive in 30-50%.⁶

The physical examination should help to distinguish between these two separate clinical entities. In osteomyelitis of the ilium it should be possible to put the hip joint through a relatively normal passive range of motion and if carefully sought a specific area of tenderness will be found. In septic arthritis of the hip, examination reveals the flexed abducted and externally rotated leg with an extreme reluctance to allow passive movement. Ultrasound will normally confirm the presence of a joint effusion with hyper-echoic synovial fluid and thickening of the joint capsule.⁷

Osteomyelitis of the ilium usually occurs through haematogenous spread of pathogenic organisms and in 95% of cases is caused by a single organism with *Staphylococcus aureus* causing 90% of infections in infants and children. Less commonly the infection is due to *Staph. epidermidis*, *Haemophilus influenza* and *Group B Streptococcus*. *Escherichia coli* and other gram-negative organisms may be the causative organisms in the neonatal period.^{8,9} Plain radiographs and ultrasonography are not helpful in the diagnosis but are useful in ruling out hip joint pathology. Radioisotope bone scanning with Technetium-99 is sensitive in localizing areas of increased blood flow hence inflammation, but is non-specific and therefore is of limited diagnostic value in the situation of acute bone infection. Magnetic Resonance imaging (MRI) and CT scanning provide excellent anatomic detail and are therefore the investigations of choice in the diagnosis of osteomyelitis of ilium. MRI will show early intraosseous changes and small subperiosteal abscesses.¹⁰ CT scanning, though less sensitive in picking up early changes, is cheaper, more widely available and can also be used to guide percutaneous drainage (Fig. 2). A large

subperiosteal abscess may decompress into the surrounding tissues usually the iliacus and gluteal muscles. Surgical drainage is carried out via a retrofascial approach allowing access to the abscess without the risk of peritoneal contamination.

The choice of antibiotic is guided by bacteriological sensitivity but early empirical therapy is instituted with the most common causative organism (*Staph. aureus*) in mind.

The key problem in the management of osteomyelitis of the ilium is delayed diagnosis. This is generally the result of a lack of awareness of this clinical entity and leads to significant morbidity from spread to surrounding tissues, generalized sepsis and chronic infection requiring repeated surgical debridement and long term antibiotic therapy. The clinician must be prepared to look beyond pyogenic arthritis when considering the diagnosis in a patient presenting with acute pain in the area of the hip joint and systemic signs of infection. Meticulous physical examination and early use of the appropriate imaging studies will lead to an accurate diagnosis and the early institution of effective therapy.

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